**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

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| SINGULAR COMPUTING LLC, | Civil Action No. 1:19-cv-12551 FDS |
| Plaintiff, | |
| v. | Hon. F. Dennis Saylor IV |
| GOOGLE LLC, | |
| Defendant. | |

**MEMORANDUM OF LAW IN SUPPORT OF
DEFENDANT GOOGLE LLC'S MOTION TO COMPEL**

## I.      INTRODUCTION

Defendant Google LLC moves to compel Singular Computing to provide substantive responses to Google's Interrogatory Nos. 16, 22, 23, 24, and 26; to respond to Request for Admission ("RFA") No. 2; and to produce documents responsive to Request for Production ("RFP") Nos. 17 and 82.  These discovery requests are relevant to the issues in this litigation, and Singular has offered no justification for refusing to respond.  Google therefore respectfully requests that the Court compel Singular to respond.

## II.     PROCEDURAL BACKGROUND

The parties have met and conferred regarding the issues addressed in this motion and have been unable to resolve them informally, including by way of a discovery conference with the Court on July 12, 2021.  With respect to Interrogatory No. 16 and RFP Nos. 17, the parties met-and-conferred on June 28, 2021.[1]  *See* Exhibit A to Declaration of Anna Porto in Support of Google's Motion to Compel ("Ex.") (June 22 Letter from Porto); Ex. B (June 28 Email from Sun).  With respect to Interrogatory Nos. 22, 23, 24, 26, RFA No. 2, and RFP No. 82, the parties met and conferred on July 2, 2021.[2]  *See* Ex. C (June 28 Letter from Porto); Ex. D (July 2 Email from Porto).

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[1] The parties met-and-conferred for 1.5 hours.  Anna Porto and Christopher Sun participated on behalf of Google; Brian Seeve and Dan McGonagle participated on behalf of Singular.

[2] The parties met-and-conferred for 30 minutes.  Anna Porto and Christopher Sun participated on behalf of Google; Brian Seeve, Dan McGonagle, and Alyssa Ruderman participated on behalf of Singular.

III.    **ARGUMENT**

      A.    **Interrogatory Nos. 22, 23, 24**

These interrogatories ask Singular to describe its conception and design of particular number formats relevant to Singular's infringement allegations and to identify any disclosure of those number formats to Google.  Specifically, these interrogatories request the following:

- **Interrogatory No. 22** asks Singular to "[d]escribe Singular's alleged conception, design, and use of a 14-bit 'approximate float' data type and identify all related documents."

- **Interrogatory No. 23** asks that Singular "[i]dentify all documents regarding Singular's alleged conception, design, and use of a 16-bit floating-point number format having an 8-bit exponent and 7-bit fraction."

- **Interrogatory No. 24** asks Singular to "[i]dentify any disclosure to Google by Singular, including without limitation by Dr. Bates, of either (a) a 14-bit 'approximate float' data type or (b) a 16-bit floating-point number format having an 8-bit exponent and 7-bit fraction."

Ex. E (Singular's Responses to Google's Fourth Set of Interrogatories).  In response to each of these interrogatories, Singular objected that the interrogatories were "vague and ambiguous."  *Id.* Singular then responded that "Singular's patents, related applications, and prosecution histories teach such a data type and thoroughly describe their design," and that "[s]ubsequent presentations to Google and other entities, as produced by Singular to Google and currently in Google's possession, reference such a data type." *See id.*  In response to Interrogatory No. 24, which requests information about disclosures by Singular to Google, Singular also included the following statement:

> Singular believes that Google was made aware of these patents as early as 2010-2011, and therefore Singular disclosed these data types to Google at this time . . . Dr. Bates also had personal conversations with numerous Google employees over the 2010-2017 timeframe, including Jeffrey Dean, during which the use and design of such data types may have been discussed.

*Id.*

After reviewing Singular's responses, Google informed Singular that "[b]ased on [Google's] review, the patents . . . contain no discussion of Singular's use of these particular floating-point formats." Ex. C.  Accordingly, Google requested that Singular "provide [the] column and line number for any portion of the patents that Singular contends describe the number formats set forth in the interrogatories." *Id.*  Additionally, Google requested that Singular supplement its "responses to describe Singular's development of the particular floating-point formats in question and identify any 'produced' 'presentations' about Singular's use of these floating-point formats by Bates number," including "the particular pages on which Singular contends that the number formats are disclosed." *Id.*  Singular refused. *See* Ex. D.

These interrogatories seek information about specific number formats relevant to Singular's infringement allegations.  Interrogatory Nos. 22 and 24 ask about Singular's conception, design, use, and disclosure of "a 14-bit 'approximate float.'" *Id.* Ex. E.  According to Singular, this "approximate float" format was employed by the S1 prototype (the "S1"), which Singular asserts practices the Patents-in-Suit, *see* Ex. F (SNL-0001469); Ex. G (Singular's Objections and Responses to Google's First Set of Interrogatories).  Interrogatory Nos. 23 and 24, meanwhile, ask about documents related to a particular "16-bit floating point number format," and Singular's alleged disclosure of the same to Google.  As Singular's infringement contentions acknowledge, "16-bit floating point" is used by Google's Tensor Processing Units ("TPUs"), which Singular accuses of infringement.  *See* Ex. H at 6 (Exhibit A – '156 Patent, Claim 7) (describing the accused TPUs as using an "8 bit[]" exponent and "7 bit[]" fraction).

Singular does not attempt to argue that these number formats are irrelevant, nor does it dispute that Singular contends it created these number formats and disclosed them to Google.  Instead, Singular maintains that it need not describe how Singular's founder Dr. Bates allegedly

conceived of these number formats, disclose where such conception is contained in the patents, or identify where or when any such disclosures were allegedly made to Google. But Singular's allegations that Dr. Bates invented these number formats and disclosed them to Google form the basis of Singular's infringement contentions, including its allegations of willfulness. *See e.g.*, ECF No. 37, FAC ¶¶ 21, 22 (alleging willful infringement and describing "disclosure to Google by Dr. Bates of his invention"). Singular cannot simply withhold specific information that would provide detail to these claims to avoid having to commit to a position.

Singular's interrogatory responses are deliberately evasive. First, Singular merely identifies the "patents, related applications, and prosecution histories." Ex. E. But as Google informed Singular, these documents say nothing of the "conception," "design" or "use" of the particular number formats used in either Singular's or Google's computer chips. If Singular contends that these documents contain the information requested, it should identify where; based on Google's review, the information is not disclosed in the patents. Second, with respect to Interrogatory No. 24, which asks about Singular's disclosures to Google, Singular responds that "Google was made aware of these patents as early as 2010-2011," and that "therefore Singular disclosed these data types to Google at this time." *Id.* But that does not satisfy the purpose of discovery in terms of identifying who allegedly disclosed what when and to whom. Third, Singular references Dr. Bates' "personal conversations with numerous Google employees," during which "such data types may have been discussed." *Id.* Here, too, Singular fails to identify which Google employees were told what. If Singular contends that Dr. Bates disclosed these number formats to Google, it should say so and/or identify in the document productions where it made such disclosures. Singular is not permitted to claim it invented these number formats, accuse Google of willful infringement in part based on its alleged disclosure of these

formats to Google, and simultaneously withhold the basis for its allegations.  Absent

supplementation of its responses, Singular should be precluded from providing more detail

regarding its alleged conception of and/or alleged disclosure to Google of these number formats

at any trial in this case.

> **B.**      **RFP No. 82 & Interrogatory No. 16**

RFP No. 82 and Interrogatory No. 16 request information about Singular's "S2," which is

a subsequent iteration of Singular's S1, Singular's allegedly practicing product.  Specifically,

RFP No. 82 requests "all documents related to the S2."  Ex. I (Singular's Resp. to Google's

Second Set of RFPs).  Singular refused to produce responsive documents, maintaining that the

request sought irrelevant information.  *Id.*  Relatedly, Interrogatory No. 16 asks Singular to

"[d]escribe all facts and identify all documents related to Singular's S2, including the reasons for

the S2's development, its technical specifications, your efforts to commercialize the S2, whether

you contend the S2 practices the Patents-in-Suit, and, if so, where and how each element of each

asserted claim is met by the S2."  Ex. J (Singular's Suppl. Resp. to Third Set of Interrogatories).

Singular initially refused to respond, objecting that the S2 was not relevant.  Following the

parties meet-and-confer, Singular supplemented its response stating that "no S2 machine has

ever been built."  *Id.* at 5.  Following further discussion between the parties, Singular refused to

supplement its response to address the rest of Interrogatory No. 16.

As Dr. Bates has described, the S1 prototype is an ███████████████████ Ex. K

(SINGULAR-00025013), which Singular asserts practices the Patents-in-Suit, *see* Ex. G.

Indeed, Singular identified the S1 in response to Google's Interrogatory No. 3, which asked

Singular to identify "any product . . . that [Singular] allege[s] to be an embodiment of any

invention claimed in the Patents-in-Suit."  Ex. G.  According to Singular's document production,

Singular later developed a subsequent iteration of the S1 referred to as the "S2."  Dr. Bates

described the S2 as the "███████████" of the S1, Ex. L (SINGULAR-00006472 at -6489),

although it shared the ███████████ Ex. M (SINGULAR-00010709).

The S2 is clearly relevant to Google's defenses in this action, including Google's

damages defenses.  First, the S2 is relevant to the value (or lack thereof) of the S1's technology.

Singular and Dr. Bates repeatedly described the S2 in reference to the S1, explaining that the S2

would be "███████████ and that it would ███████████.  *See id*.  Thus,

the S2's design, the motivations for its development, and Singular's attempts to commercialize

the S2 bear on the S1's shortcomings, which may undermine Singular's claims as to the S1's

commercial success.  *See Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120

(S.D.N.Y. 1970) (commercial success of product made under the patent is relevant to reasonable

royalty).  Similarly, if the S2 does not embody the alleged inventions claimed in the asserted

patents, then the fact that Singular abandoned that technology would also be relevant to its value.

Second, information about the S2's design and whether it practices the Patents-in-Suit is relevant

to Singular's contention that the S1 practices the patents.  Given that Dr. Bates represented that

the S2 ███████████" as the S1, if the S2 were modified in a way that

undermines Singular's contention that the S1 practices the Patents-in-Suit, Google is entitled to

examine those design differences.  Third, relevant to RFP No. 82, the S1 and the S2 are closely

related—the ███████████ and the two prototypes ███████████—

making it likely that this information is "reasonably calculated to lead to the discovery of

admissible evidence." *Licensed 2 Thrill, LLC v. Rakuten, Inc.*, No. CV 13-11257-DJC, 2015 WL

13376540, at *1 (D. Mass. Oct. 13, 2015); *Baker v. Liggett Group, Inc.*, 132 F.R.D. 123, 125 (D.

Mass. 1990) ("Rule 26(b)(1) generally permits liberal discovery of relevant information.").

Indeed, Singular has already produced numerous documents related to the S2, all of which bear on the S1 as well.  *See e.g.*, Exs. K, L, M.

        C.        **Interrogatory No. 26**

Interrogatory No. 26 seeks information as to the infringement allegations Singular asserts in the First Amended Complaint ("FAC").  Specifically, Interrogatory No. 26 states:

> Explain why Singular contends that the program compiled from the FAC Testing Source Code is an accurate model of the 'TPU's float32 multiplication operation' (see FAC at ¶ 94), including without limitation identifying which variables in the FAC Testing Source Code, if any, correspond to the claimed 'possible valid inputs' to the element in the TPU that Singular contends is 'the LPHDR unit executing the first operation'; which TPU output(s), if any, correspond to the claimed 'first output signal of the LPHDR unit'; and what the corresponding 'result of an claimed exact mathematical calculation' would be for any such 'first output signal.'"

Ex. E.  Singular objected that the interrogatory was "overly broad and unduly burdensome" and sought irrelevant information.  *Id.*  Singular further stated that "[t]his interrogatory is also objected to because it is based on a flawed premise," and that "[a]s for the source code, it speaks for itself."  *Id.*  During the parties' meet-and-confer, Google requested that Singular supplement its response to provide the information requested, or at least to explain the "flawed premise" that prevented Singular from responding.  Ex. D.  Singular refused.  *Id.*

In the FAC, Singular repeatedly cites "the Singular test," which it alleges shows that the accused TPUs satisfy the asserted patents' claimed minimum error rates.  In particular, Singular alleges that the Singular test compared "the float32 numerical values ***produced by the TPU's float32 multiplication operation***" to "the numerical values "produced by the exact full precision multiplication operations."  ECF No. 37 ¶¶ 94, 111, and 129 (emphasis added).  Based on this test, Singular asserted that it determined the relevant values "differ, for at least 5% of those multiplied pairs . . . by at least .05%," satisfying the claimed error rates.  *Id.* ¶¶ 94, 111; *see also*

*id.* ¶ 129.  To examine these allegations, Google moved to compel the FAC Testing Source

Code, which Singular eventually produced.  *See* ECF No. 129 at 3.

Interrogatory No. 26 seeks more specificity regarding Singular's allegations based on the

FAC Testing Source Code.  In particular, the interrogatory requests that Singular explain which

of the test code's variables allegedly correspond to the various elements of the asserted claims.

In lieu of a response, Singular stated that Interrogatory No. 26 contains a flawed premise.

During the parties' meet-and-confer and the subsequent discovery conference, Singular

suggested that it need not respond because the FAC Testing Source Code is *not* an accurate

model of the "TPU float32 multiplication operation."  FAC ¶ 94; Ex. D.  In other words, to avoid

responding to the interrogatory, Singular now argues that it never contended that the FAC

Testing Source modeled the accused products, despite its express statements in the FAC that the

software "illustrated" what the "TPU's float32 multiplication operation" does.  *See* ¶¶ 111, 129.

By relying on FAC Testing Source Code to support its infringement allegations, though,

Singular represented that such code was accurate model of the "TPU['s] float32 multiplication

operation."  *Id.*  Without this implied representation, Singular may well have lacked a basis for

filing its complaint.  *See View Eng'g, Inc. v. Robotic Vision Sys., Inc.*, 208 F.3d 981, 986 (Fed.

Cir. 2000) ("The presence of an infringement analysis plays the key role in determining the

reasonableness of the pre-filing inquiry made in a patent infringement case under Rule 11.").

Singular cannot now reverse course by claiming that it does not stand by its allegations in its

FAC.  Singular thus must supplement its response to the interrogatory as written.

Singular's claim that the FAC Testing Source Code "speaks for itself" also does not

justify its refusal to answer the interrogatory.  Singular expressly alleged in the FAC that its

testing code "illustrated" how "the float32 numerical values produced by the TPU's float32

multiplication operation . . . differ … from the respective exact full precision values." FAC ¶ 94. Singular made this allegation to support its contention that the TPU meets specific claim limitations. *See*, *e.g.*, ECF No. 37, ¶ 94, 111, 129 (similar). Singular must have had a theory regarding how the testing code modeled the "TPU's float32 multiplication operation" and how that model supported its infringement theory. Singular should be required to explain that theory. *See* Fed. R. Civ. P. 37 ("[A]n evasive or incomplete disclosure, answer, or response must be treated as a failure to disclose, answer, or respond."); *Dollar v. Long Mfg., N.C., Inc.*, 561 F.2d 613, 616-17 (5th Cir. 1977) ("A partial answer by a party reserving an undisclosed objection to answering fully is not candid. It is evasive.").

### D.     RFP No. 17

RFP No. 17 requests information about Singular's finances relevant to the Patents-in-Suit. Specifically, it seeks "[d]ocuments sufficient to show [Singular's] revenues, expenses, or profits . . . from the sale, lease, or licensing of any products or services that are based upon, include, or utilize processors designed to incorporate, embody, or practice any claims of the Patents-in-Suit, including documents presented to management, directors, and actual or potential investors." Ex. N (Singular's Objections and Responses to Google's First Set of RFPs). Singular agreed to produce responsive documents. *Id*. As Google explained to Singular during the parties' meet-and-confer, however, a review of Singular's production revealed that Singular had produced only a single profit and loss statement from a single year. *See* Ex. A. In response, Singular stated that it would collect and produce additional responsive documents, but it has failed to do so and the close of discovery is a week away.

Singular's financial information related to the Patents-in-Suit is clearly relevant to Google's damages defenses, which Singular does not contest. Indeed, these documents are critical to Google's ability to advance its own damages theory. Singular's commercialization of

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the Patents-in-Suit and the specific financial terms of that commercialization bear on the

purported value of the patented features.  Furthermore, whether Singular's revenue primarily

comprised of licensing fees or other funding is relevant to the commercial viability of the

patented features.  Singular's revenue around the time of the hypothetical negotiation also

informs the amount for which the parties would have agreed to license the patented technology

and the acceptable terms of any such agreement.  *See Gamevice, Inc. v. Nintendo Co. Ltd.*, No.

18-cv-01942-RS (TSH), 2019 WL 5565942, at *3 (N.D. Cal. Oct. 29, 2019) (compelling updated

production of patentee's sales, revenue, and profit information as relevant to defendant

"Nintendo's damages calculations"); *Apple Inc. v. Samsung Elecs. Co.*, No. 12-CV-0630-LHK

(PSG), 2013 WL 1563253, at *5 (N.D. Cal. Apr. 12, 2013) (compelling patentee to produce

financial information "necessary under the *Georgia–Pacific* factors" . . . relevant to Samsung's

defenses to [the patentee's] damages theories.").  Given that Singular does not contest relevance,

it must produce its financial documentation, including balance sheets, profit and loss statements,

or revenue reports going back to Singular's asserted priority date.

       **E.**       **RFA No. 2**

       RFA No. 2 asks Singular to "[a]dmit that the Patents-in-Suit do not encompass execution

units using an 8-bit integer format."  Ex. O (Singular's Responses to Google's First Set of

RFAs).  In response, Singular stated that "[b]ecause the Court has not issued its claim

construction ruling," Singular "lacks sufficient information to admit or deny the request," and

thus Singular denied the statement.  *Id.*  During the parties meet-and-confer, Google explained

that it was unaware of any pending claim construction issue that would impact Singular's

response to this RFA.  *See* ECF Nos. 111, 112.  Google further asked Singular to identify any

claim construction issue that was preventing Singular from responding.  Ex. D.  Singular refused.

Singular's suggestion that it lacks sufficient information to respond to RFA No. 2 is improper. As this Court has already determined in the context of Google's interrogatory requesting Singular's invalidity contentions, the parties are not entitled to avoid responding to discovery requests on the basis of the Court's forthcoming claim construction order. *See* ECF No. 144 at 3-5. The Court's order in that context applies equally here: "if [Singular] believes its response hinges on a particular construction," it can respond based on the information available and "if appropriate seek to amend its response at a later date." ECF No. 144 at 4. As is standard practice in discovery, if information surfaces that impacts Singular's response, Singular can supplement its response as appropriate. But Rule 36(a) requires a "reasonable inquiry" to determine whether requests should be admitted or denied, and merely identifying an undisclosed, unresolved claim construction issue does not suffice. *A & V Fishing, Inc. v. Home Ins. Co.*, 145 F.R.D. 285, 288 (D. Mass. 1993) ("[J]ust because a case is in the early stages of discovery does not mean that a party can merely deny requests.").

## IV.     CONCLUSION

For the foregoing reasons, Google respectfully requests that its motion to compel be granted.

Respectfully submitted,

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## **CERTIFICATE OF SERVICE**

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